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In this issue . . .

NEW GUIDE FOR MISSILE CONTRACTING

Fact Sheet: Advanced Research Projects Agency

How KENNAMETAL* Sealing Rings...

Help to Withstand High Temperatures . . . A jet engine shaft seal of Kentanium,* a titanium carbide, operating without lubrication at 15,000 surface feet per minute at 1000°F and 0.6 pounds pressure per lineal inch of circumference outperformed every other material tried. Kentanium is stress-free, dimensionally stable, maintains great strength and provides exceptional resistance to abrasion. It is providing all of these advantages on many applications . . . at temperatures up to 2000°F and as high as 5000°F for momentary service.

Help Solvent Separators to Resist Abrasion . . . On this job, Kennametal rings of Grade K96 were installed, replacing conventional seals which had at no time given more than two months' service and had sometimes failed in only 30 hours. Kennametal rings were inspected after six months in service, showed no perceptible wear and were returned to service. The customer predicts an ultimate service advantage of 50 to 1.

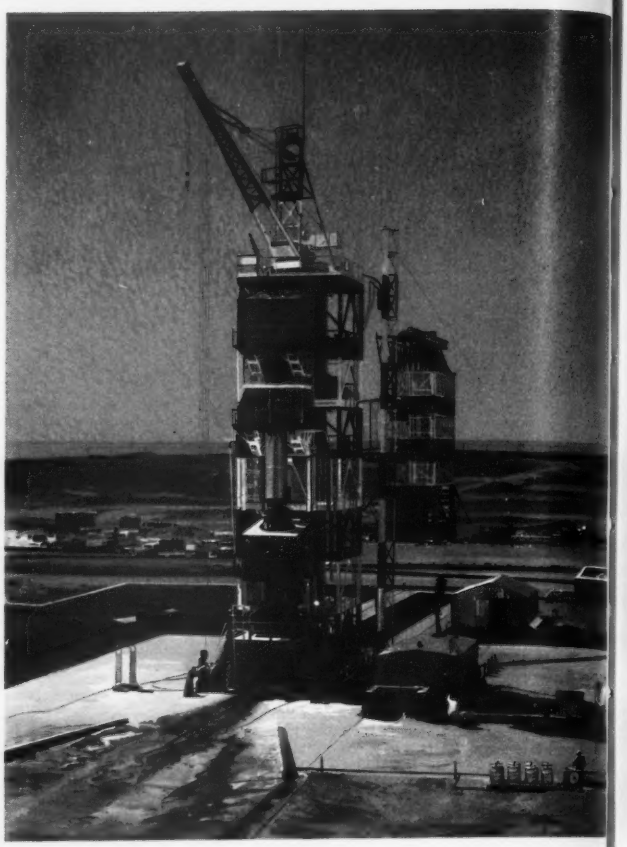
Help to Power Rockets . . . Here the sealing rings are used to handle red fuming nitric acid. After extensive testing of materials, rings made of Kennametal K501, a platinum-base composition, were chosen. The manufacturer reports: "Kennametal ring sealing results have been far superior to any other material with no indication of seal face wear." This was after the best life of the rings previously used had been exceeded.

For details, write for 24-page Booklet B-111, "Characteristics of Kennametal" . . . and 12-page Booklet B-444 which describes "Kentanium." KENNAMETAL INC., Dept. DT, Latrobe, Pa.

*Trademark

3172

INDUSTRY AND KENNAMETAL ...Partners in Progress



A vivid graphic portrayal of activities on the Navy's VANGUARD program was recently on view in the Pentagon Concourse. The series of paintings was presented by the Navy Combat Art Section and gives artistic expression to many ideas on the missile program which bare words could do little to convey.

The work is that of Navy reserve pilot and DATA staffer Lt. Ted Wilbur, USNR, and we are pleased to reproduce here and on this month's cover part of the paintings. *Credit is given to Navy Combat Art.*

JULY 1958

. . . keep up to date with data magazine

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data

MISSILE CONTRACTOR GUIDE

GENERAL PROCUREMENT INFORMATION ON GUIDED MISSILE PROGRAMS

Revised July 1958

In response to requests from firms and individuals desiring more guidance in their efforts to participate in the Guided Missile Programs of the Military Departments, DATA presents a more complete and revised contractor's Guide to Missile Procurement.

DEPARTMENT OF THE ARMY

CORPORAL	NIKE-AJAX
DART	NIKE-HERCULES
HAWK	NIKE-ZEUS
JUPITER	REDSTONE
LACROSSE	SERGEANT

Companies interested in the Department of the Army Guided Missle Program as a prime or subcontractor may utilize U. S. Army Ordnance Corps District Offices as readily accessible points of contact, or to discuss current procurements on a prime contract basis and possible potential subcontracting sources. These offices place and administer Army Ballistic Missile contracts including contracts for Redstone Arsenal and the Army Ballistic Missile Agency. Each of these districts has a Small Business Specialist available to assist and advise small business concerns:

Birmingham Ordnance District
2120 North Seventh Avenue
Birmingham, Alabama

Boston Ordnance District
Boston Army Base
Boston 10, Massachusetts

Chicago Ordnance District
209 West Jackson Boulevard
Chicago 6, Illinois

Cincinnati Ordnance District
Swift Building, 230 E. 9th Street
Cincinnati 2, Ohio

Cleveland Ordnance District
Lincoln Building, 1367 E. 6th Street
Cleveland 14, Ohio

Detroit Ordnance District
574 East Woodbridge
Detroit 31, Michigan

Los Angeles Ordnance District
55 South Grand Avenue
Pasadena, California

New York Ordnance District
180 Varick Street
New York 14, New York

Philadelphia Ordnance District
128 North Broad Street
Philadelphia 2, Pennsylvania

Pittsburgh Ordnance District
200 - 4th Avenue
Pittsburgh 22, Pennsylvania

Rochester Ordnance District
Sibley Tower Building
25 North Street
Rochester, New York

St. Louis Ordnance District
1016 Olive Street
St. Louis 1, Missouri

San Francisco Ordnance District
1515 Clay Street, P. O. Box 1829
Oakland 12, California

Springfield Ordnance District
Springfield Armory
Springfield 1, Massachusetts

The Army presently has contracts with the following companies which utilize innumerable companies and organizations for subcontract work:

CORPORAL

Prime Contractors: Firestone Tire & Rubber Company
Los Angeles, California

Gilfillan Brothers
Los Angeles, California

Principal Subcontractors: Cary Multiplier Company (Component: Gyro, controls)
San Gabriel, California

Ryan Aeronautical, Inc. (Component: Motor)
San Diego, California

DART

Prime Contractors: Aerophysics Development Corporation
P. O. Box 949
Santa Monica, California

Utica Bend Corporation
Utica, Michigan

Grand Central Rocket Company (Component: Rocket motor, propellant manufacture & loading)
Redlands, California

(DART, Continued)

Principal Subcontractors: Bulova Research & Development Laboratories (Component: Fuze)
Bulova Park, Flushing 70, N. Y.

Whittaker Gyroscope Company (Component: Gyroscope)
Van Nuys, California

HAWK I

Prime Contractors: Raytheon Manufacturing Company (Component: System)
Missile & Radar Division
Bedford, Massachusetts

Principal Subcontractors: Aerojet-General Corporation (Component: Motor-single chamber)
Sacramento, California

Northrop Aircraft Corporation (Component: Airframe & launcher)
Hawthorne, California

Picatinny Arsenal (Component: Warhead & allied accessories)
Dover, New Jersey

Food Machinery & Chemical Corp. (Component: Loader)
Ordnance Division
San Jose, California

JUPITER

Prime Contractors: Army Ballistic Missile Agency
Redstone Arsenal, Huntsville, Alabama

Chrysler Corporation (Component: Missile fuselage & assembly)
Detroit, Michigan

Principal Subcontractors: North American Aviation, Inc. (Component: Rocket motor and associated equipment)
Los Angeles, California

Ford Instrument Company (Component: All-inertial guidance package)
Long Island, New York

LACROSSE

Prime Contractors: Cornell Aeronautical Laboratory (Responsible for the entire system)
Buffalo, New York

The Martin Company (R&D Co-contractor, system production)
Baltimore 3, Maryland

Thiokol Chemical Corporation (Motor development)
Redstone Arsenal, Huntsville, Alabama

Principal Subcontractors: Telecommunications Laboratory (Component: Computer, DME - distance measuring equipment, & angle tracer)
Nutley, New Jersey

Farrand Optical Company, Inc. (Component: Target survey unit)
New York 70, New York

NIKE - AJAX

Prime Contractors: Western Electric Company
120 Broadway, New York 5, New York

Principal Subcontractors: Douglas Aircraft Company (Component: Missile)
Charlotte ORD, Missile Plant
Charlotte, North Carolina

NIKE - HERCULES

Prime Contractors: Western Electric Company, Inc.
120 Broadway, New York 5, New York

Douglas Aircraft Company (Component: Missile - exclusive of guidance section, launching area equipment, assembly area equipment)
Charlotte ORD, Missile Plant
Charlotte, North Carolina

Principal Subcontractors: Consolidated Western Steel (Component: Launchers)
Los Angeles, California

Goodyear Aircraft Company (Component: Boosters)
Akron, Ohio

Borg-Warner, Ingersall Div. (Component: Metal parts for boosters)
Kalamazoo, Michigan

NIKE - ZEUS

Prime Contractors: Western Electric Company
120 Broadway, New York 5, New York

Principal Subcontractors: Douglas Aircraft Company (Component: Missile; launching & handling equipment)
3000 Ocean Park Boulevard
Santa Monica, California

Grand Central Rocket Company (Component: Propellant)
Redlands, California

REDSTONE

Prime Contractors: Army Ballistic Missile Agency
Redstone Arsenal, Huntsville, Alabama

Chrysler Corporation
Detroit, Michigan

Principal Subcontractors: North American Aviation, Inc. (Component: Rocket motor & associated equipment)
Los Angeles, California

Ford Instrument Division of
Sperry Rand Company
Long Island City, New York

Reynolds Metal Company (Component: Missile fuselage)
Louisville, Kentucky

SERGEANT

Prime Contractors: Jet Propulsion Laboratory (Component: System)
4800 Oak Grove Drive
Pasadena, California

Sperry Gyroscope Company (Component: All critical R & D components).
Salt Lake City, Utah

Principal Subcontractor: Thiokol Chemical Corporation (Component: Motor)
Redstone Division
Huntsville, Alabama

DEPARTMENT OF THE NAVY

BULLPUP	SPARROW I
CORVUS	SPARROW II
PETREL	SPARROW III
POLARIS	TALOS
REGULUS I	TARTAR
REGULUS II	TERRIER
SIDEWINDER	

For information on requirements of the Department of the Navy regarding missiles, write the following Small Business Specialists who will provide more specific information as to how further to proceed:

Small Business Specialist
Bureau of Aeronautics
Department of the Navy
20th & Constitution Avenue, N. W.
Washington 25, D. C.

Small Business Specialist
Bureau of Ordnance
Department of the Navy
18th & Constitution Avenue, N. W.
Washington 25, D. C.

Work on Navy missile requirements may also be done for prime and principal subcontractors having current contracts with the Navy Department. For information on such prime contractors consult "Selling to Navy Prime Contractors" which may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 30 cents. Among current Navy contractors in missile work are the following:

BULLPUP

Prime Contractors: The Martin Company
Middle River, Maryland and Orlando, Florida

Principal Subcontractors: Aerojet General Corporation (Component: Propulsion)
Azusa, California

Naval Ordnance Laboratory (Component: Fuze)
Corona, California

Elgin National Watch Company (Component: Fuze)
Elgin, Illinois

CORVUS

Prime Contractors: Temco Aircraft Corporation
Dallas, Texas

Principal Subcontractors: Reaction Motors, Inc. (Component: Propulsion)
Danville, New Jersey

Texas Instrument Company (Component: Guidance)
Dallas, Texas

W. L. Maxson Corporation (Component: Guidance)
New York, New York

PETREL

Prime Contractors: Fairchild Engine & Airplane Company
Guided Missile Division
Wyandanch, Long Island, New York

Principal Subcontractors: Fairchild Engine & Airplane Company
Wyandanch, Long Island, New York
Guided Missile Division (Component: Airframe, propulsion, guidance, fire control equipment)

Naval Ordnance Laboratory (Component: Fuze)
White Oak, Maryland

Lockheed Aircraft Corporation (Component: Launcher)
Burbank, California

Naval Ordnance Plant (Component: Warhead)
Forest Park, Illinois

Bellock Corporation (Component: Fuze)
New York, New York

POLARIS

Contractors:

Missile system: (Prime)	Lockheed Missile Systems Division Sunnyvale, California
Propulsion:	Aerojet General Corporation Sacramento, California (Subcontractor to Lockheed)
Guidance development:	Massachusetts Institute of Technology Cambridge, Massachusetts (Associate contractor to Lockheed)

Guidance production & fire control:	General Electric Corporation Pittsfield, Massachusetts (Subcontractor to Lockheed)
Instrumentation: (Prime)	Interstate Electronics Corporation Anaheim, California
Ship design:	Bureau of Ships
Ship navigation equipment:	Various contractors
Launcher design: (Prime)	Westinghouse Corporation Sunnyvale, California
Warhead:	Atomic Energy Commission

REGULUS I

Prime Contractors: Chance Vought Aircraft, Inc.
Dallas, Texas

Principal Subcontractors: Chance Vought Aircraft, Inc. (Component: Airframe, guidance)
Dallas, Texas

Allison Division (Component: Propulsion)
General Motors Corporation
Indianapolis, Indiana

Sandia Corporation (Component: Warhead, fuze)
Sandia Base
Albuquerque, New Mexico

REGULUS II

Prime Contractors: Chance Vought Aircraft, Inc.
Dallas, Texas

Principal Subcontractors: Chance Vought Aircraft, Inc. (Component: Airframe)
Dallas, Texas

General Electric Company (Component: Propulsion)
Aircraft Gas Turbine Division
Cincinnati, Ohio

A. C. Spark Plug (Component: Guidance)
Division of Guided Missiles
Milwaukee, Wisconsin

Sandia Corporation (Component: War-
Albuquerque, New Mexico head, fuze)

Texas Instrument Company (Component:
Dallas, Texas Computer)

SIDEWINDER

Prime Contractors:

Philco Corporation
Philadelphia, Pennsylvania

General Electric Company
Utica, New York

Norris-Thermodor (Component: Propulsion
Los Angeles, California metal parts)

Hunter Douglas (Component: Propulsion metal
Riverside, California parts)

Philco Corporation (Component: Guidance)
Philadelphia, Pennsylvania

Eastman Kodak Company (Component: Fuze)
Rochester, New York

Minneapolis-Honeywell Regulator Company
(Component: Fuze)
Minneapolis, Minnesota

Elgin Watch Company (Component: Fuze)
Elgin, Illinois

Baldwin Piano Company (Component: Fuze)
Cincinnati, Ohio

Naval Powder Factory (Component: Propulsion
Indianhead, Maryland grain)

Houdaille Industries (Component: Warhead)
Buffalo, New York

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Washington, D. C.

Naval Mine Depot (Component: Warhead loading)
Yorktown, Virginia

Bulova Research Laboratory (Component: Fuze)
Woodside, New York

Hamilton Watch Company (Component: Fuze)
Lancaster, Pennsylvania

Beatrice Field Tank Company (Component: Shipping
Beatrice, Nebraska containers)

Allied Federal Industries (Component: Warhead
Newark, New Jersey metal parts)

Principal Subcontractors: Electronics Corporation of America (Component:
Cambridge, Massachusetts IR components)

IR Industries (Component: IR components)
Needham, Massachusetts

Bausch and Lomb (Component: Guidance & Control)
Rochester, New York

American Machine & Foundry Company (Component:
Buffalo, New York Guidance)

SPARROW I

Prime Contractors: Sperry Gyroscope Company
Great Neck, Long Island, New York
and Bristol, Tennessee

Principal Subcontractors: Douglas Aircraft Company, Inc. (Component: Airframe)
Santa Monica, California

Aerojet General Corporation (Component: Propulsion)
Azusa, California

Sperry Gyroscope Company (Component: Guidance)
Great Neck, Long Island, New York

Tranter Manufacturing Company (Component: Warhead)
Lansing, Michigan

Congoleum-Nairn Company (Component: Warhead)
Kearney, New Jersey

Bendix Aviation Corporation (Component: Fuze)
York, Pennsylvania

SPARROW II

Prime Contractor: Douglas Aircraft Company
Santa Monica, California

Principal Subcontractors: Douglas Aircraft Company (Component: Airframe)
Santa Monica, California

Aerojet General Corporation (Component: Propulsion)
Azusa, California

Bendix Aviation Corporation (Component: Guidance)
Burbank, California

Naval Ordnance Laboratory (Component: Fuze - Warhead)
Corona, California

Bendix Aviation Corporation (Component: Fuze)
Detroit, Michigan

Elgin National Watch Company (Component: Safety & arming)
Burbank, California

SPARROW III

Prime Contractor: Raytheon Manufacturing Company
Bedford, Massachusetts

Principal Subcontractors: Raytheon Manufacturing Company (Components: Airframe, guidance, fuze)
Bedford, Massachusetts

Aerojet General Corporation (Component: Propulsion)
Azusa, California

Naval Ordnance Laboratory (Component: Warhead)
White Oak, Maryland

Rheem Manufacturing Company (Component:
Downey, California Warhead)

Elgin National Watch Company (Components: Safety
Burbank, California and arming)

TALOS

Prime Contractor (Shipborne): Bendix Aviation Corporation
Bendix Products Division
Mishawaka, Indiana

(Land-based): Radio Corporation of America
Camden, New Jersey

Principal Subcontractors: McDonnell Aircraft Corporation (Component:
St. Louis, Missouri Airframe,
propulsion)

Allegany Ballistics Laboratory (Component:
Cumberland, Maryland Propulsion)

Farnsworth Electric Company (Component: Guidance)
Fort Wayne, Indiana

Bendix Aviation Corporation (Component: Propulsion)
Bendix Products Division
South Bend, Indiana

Bendix Radio Division (Component: Control system)
Baltimore, Maryland

Sandia Corporation (Component: Warhead)
Albuquerque, New Mexico

Naval Ordnance Laboratory (Component: Warhead)
White Oak, Maryland

New Mexico State College (Component: Warhead)
Socorro, New Mexico

Naval Ordnance Laboratory (Component: Fuze)
Corona, California

Diamond Ordnance Fuze Laboratory (Component:
Washington, D. C. Fuze)

Melpar, Inc. (Component: Fuze)
Washington, D. C.

American Machine & Foundry Co. (Component:
Brooklyn, New York Launching
system)

TARTAR

Prime Contractors: Applied Physics Laboratory
Johns Hopkins University
Silver Spring, Maryland

Convair (Component: Airframe, guidance)
Pomona, California

Allegany Ballistics Laboratory (Component: Propulsion)
Cumberland, Maryland

Naval Ordnance Laboratory (Component: Warhead)
White Oak, Maryland

New Mexico Institute of Mines & Technology (Component:
Socorro, New Mexico Warhead)

Bendix Pacific Corporation (Component: Fuze)
Santa Monica, California

Philco Corporation (Component: Fuze)
Philadelphia, Pennsylvania

Aerojet General Corporation (Component: Propulsion)
Sacramento, California

Vitro Laboratory (Component: Systems
Silver Spring, Maryland engineering)

Raytheon Manufacturing Corporation (Component: Radar)
Wayland, Massachusetts

Ford Instrument Company (Component: Computer)
Long Island, New York

General Electric Company (Component: Director)
Pittsfield, Massachusetts

Bell Laboratories (Component: Weapon control equipment)
Whippany, New Jersey

Principal Subcontractor: Varian Associates (Component: Power tubes)
Palo Alto, California

TERRIER

Prime Contractors: M. W. Kellog Company (Component: Booster and sustainer)
Jersey City, New Jersey

Convair
Pomona, California

Allegany Ballistics Laboratory (Component: Propulsion)
Cumberland, Maryland

S. B. Hicks and Company (Component: Booster and
Hyde Park, Massachusetts sustainer)

Principal Subcontractors: Diamond Ordnance Fuze Laboratory (Component:
Washington, D. C. Fuze)

Philco Corporation (Component: Fuze)
Philadelphia, Pennsylvania

Eastman Kodak (Component: Fuze)
Rochester, New York

Elgin National Watch Company (Component: Fuze)
Burbank, California

Bulova Watch Company (Component: Fuze)
New York, New York

Bendix Pacific (Component: Hydraulics and air motor)
Hollywood, California

Thompson Products (Component: Auxiliary power supply)
Cleveland, Ohio

THE DEPARTMENT OF THE AIR FORCE

ATLAS	MATADOR
BOMARC	RASCAL
BULL GOOSE	SNARK
FALCON	THOR
GREEN QUAIL	TITAN
MACE	

The Small Business Specialist assigned to the Air Force Ballistic Missile Office works closely with Prime and Principal Subcontractors to obtain subcontracting requirements. These requirements are forwarded to the Small Business Specialists at the various Air Procurement District Offices. Individuals or Small Business concerns desiring subcontracting opportunities with Prime and Principal Subcontractors in the missile program may obtain information by writing to the Small Business Specialist at the Air Procurement District Office nearest their place of business:

Boston Air Procurement District
Middletown Air Materiel Area
Boston Army Base
Boston, Massachusetts

Newark Air Procurement District
Middletown Air Materiel Area
218 Market Street
Newark, New Jersey

New York Air Procurement District
Middletown Air Materiel Area
111 East 16th Street
New York 3, New York

Philadelphia Air Procurement District
Middletown Air Materiel Area
1411 Walnut Street
Philadelphia 2, Pennsylvania

Rochester Air Procurement District
Middletown Air Materiel Area
20 Symington Place
Rochester 3, New York

Chicago Air Procurement District
Oklahoma City Air Materiel Area
5555 South Archer Avenue
Chicago 38, Illinois

Dallas Air Procurement District
San Antonio Air Materiel Area
912 S. Ervay
Dallas 1, Texas

Cleveland Air Procurement District
Mobile Air Materiel Area
1279 W. Third Street
Cleveland 13, Ohio

Detroit Air Procurement District
Mobile Air Materiel Area
W. Warren Ave. & Lonyo Blvd.
Detroit 32, Michigan

Indianapolis Air Procurement District
Mobile Air Materiel Area
54 Monument Circle
Indianapolis 6, Indiana

Arizona Air Procurement District
San Bernardino Air Materiel Area
P. O. Box 5555, Helen Street Annex
Tuscon, Arizona

Los Angeles Air Procurement District
San Bernardino Air Materiel Area
1206 Maple Avenue
Los Angeles 15, California

Milwaukee Air Procurement District
Oklahoma City Air Materiel Area
770 N. Plankinton Avenue
Milwaukee, Wisconsin

St. Louis Air Procurement District
Oklahoma City Air Materiel Area
1114 Market Street
St. Louis, Missouri

Dayton Air Procurement District
Mobile Air Material Area
Bldg. 70, Area "C"
Wright-Patterson Air Force Base
Dayton, Ohio

San Diego Air Procurement District
San Bernardino Air Materiel Area
4325 Pacific Highway
San Diego 10, California

Atlanta Air Procurement District
Warner Robins Air Materiel Area
41 Exchange Place, S. E.
Atlanta, Georgia

San Francisco Air Procurement District
Sacramento Air Material Area
Bldg. 1, Oakland Army Terminal
W. Grand Ave. & Maritime
Oakland 14, California

ATLAS (SM-65)

Prime Contractors: Ramo-Wooldridge Corporation (Component: System)
Los Angeles, California

Convair, San Diego, California

Principal Subcontractors: Several contracts have been let by the Western Development Division of ARDC for SM-65 weapon system and its components. The Ramo-Wooldridge Corporation holds the contract for systems engineering and technical direction of the total effort. For this reason that company may be considered the prime contractor. The other major contractors, though prime Air Force contractors, may be considered subcontractors inasmuch as they hold contracts for the components or subsystems of the SM-65 Weapons System. The contractors and their locations are indicated as follows:

Airframe: Convair
San Diego, California

Nose-Cone: General Electric Company
Schenectady, New York

Propulsion: North American Aviation
Los Angeles, California

Guidance: General Electric Company
Syracuse, New York

Burroughs
Paoli, Pennsylvania

(ATLAS, Continued)

Armament: Atomic Energy Commission (Warhead)
Los Alamos, New Mexico

Sandia Corporation (Fuze)
Albuquerque, New Mexico

Support: American Machine & Foundry (Auxiliary power unit)
Pacoima, California

BOMARC (IM-99)

Prime Contractors: Boeing Airplane Company
Seattle, Washington

Principal Subcontractors: Aerojet General Corporation (Component: Booster rocket)
Azusa, California

Marquardt Aircraft Company (Component: Ramjet engines)
Van Nuys, California

Westinghouse Electric Corporation (Component: Homing radar flight control group)
Baltimore, Maryland

BULL GOOSE (SM-73)

Prime Contractors: Fairchild Engine & Airplane Corporation
Fairchild Aircraft Division
Hagerstown, Maryland

Associate Contractor: Ramo-Wooldridge Corporation (Component: Electronic)
Los Angeles, California

Principal Subcontractors: American Machine & Foundry Company (Component: Ground support equipment)
Brooklyn, New York

Paul Omohundro Company (Component: Airframe components)
Los Angeles, California

FALCON (GAR 1, 2, 3, 4)

Prime Contractors: Hughes Aircraft Company
Culver City, California

Principal Subcontractors: Thiokol Corporation (Component: Rocket motor)
Redstone Arsenal, Alabama

Willard Storage Battery Company (Component:
Cleveland, Ohio Battery)

AVCO Manufacturing Corporation (Component:
Richmond, Indiana Stabilizer, missile container, flipper)

Vectron, Inc. (Component: Frequency converter)
Waltham, Massachusetts

General Sintering Corporation (Component: Fuze,
Melrose Park, Illinois fuze arming)

GREEN QUAIL (GAM-72)

Prime Contractors: McDonnell Aircraft Corporation
St. Louis, Missouri

Boeing Aircraft Company (Aircraft modification)
Seattle, Washington

Principal Subcontractors: General Electric Company (Component: Power plant)
Lynn, Massachusetts

American Machine & Foundry Co. (Component:
Brooklyn, New York Support equipment)

Ramo-Wooldridge Corporation (Component:
Los Angeles, California Electronics)

MACE (TM-76)

Prime Contractor: The Martin Company, Baltimore, Maryland

Principal Subcontractors: Goodyear Aircraft Company (Component: Guidance)
Akron 15, Ohio

A. C. Spark Plug (Component: Inertial guidance)
Milwaukee, Wisconsin

MATADOR (TM 61A & 61C)

Prime Contractor: The Martin Company, Baltimore, Maryland

Principal Subcontractors: Most of the components are from subcontractors and vendors; no major subsystems are subcontracted. The engine, APW-11 and inverter are GFAE.

RASCAL (GAM-63)

Prime Contractor: Bell Aircraft Corporation
Niagara Falls, New York

Principal Subcontractors: Radio Corporation of America (Component: Guidance components)
Camden, New Jersey

Texas Instrument Company (Component: Guidance components)
Dallas, Texas

Arma Corporation (Component: Guidance components)
New York, New York

SNARK (SM-62)

Prime Contractor: Northrop Aircraft, Inc., Hawthorne, California

Principal Subcontractors: None

THOR (SM-75)

Prime Contractors: Ramo-Wooldridge Corporation (Component: System)
Los Angeles, California

Douglas Aircraft Company
Santa Monica, California

Principal Subcontractors: Several contracts have been let by the Western Development Division of ARDC for SM-75 Weapons System and its components. The Ramo-Wooldridge Corporation holds the contract for systems engineering and technical direction of the total effort. For this reason that company may be considered the prime contractor. The other major contractors, though prime Air Force contractors, may be considered

(THOR (SM-75), Continued)

subcontractors, inasmuch as they hold contracts for the components or subsystem of the SM-75 Weapons System. The contractors and their locations are indicated as follows:

Airframe: Douglas Aircraft Company
Santa Monica, California

Nose Cone: General Electric Company
Schenectady, New York

Propulsion: North American Aviation
Los Angeles, California

Guidance: A. C. Spark Plug Company
Milwaukee, Wisconsin

Armament: Atomic Energy Commission (Warhead
Los Alamos, New Mexico design & development)

Sandia Corporation (Fuze design and
Albuquerque, New Mexico development)

TITAN (SM-68)

Prime Contractors: Ramo-Wooldridge Corporation (System)
Los Angeles, California

The Martin Company, Denver, Colorado

Principal Subcontractors: Several contracts have been let by the Western Development Division of ARDC for SM-68 Weapons System and its components. The Ramo-Wooldridge Corporation holds the contract for systems engineering and technical direction of the total effort. For this reason that company may be considered the prime contractor. The other major contractors, though prime Air Force contractors, may be considered subcontractors, inasmuch as they hold contracts for the components or subsystems of the SM-68 Weapons System. The contractors and their locations are indicated as follows:

Airframe: The Martin Company, Denver, Colorado

Nose-Cone: AVCO, Stratford, Connecticut

Guidance:	Bell Telephone Laboratories Whippany, New Jersey
	Arma Bosch, Garden City, N. Y.
	Sperry Rand, St. Paul, Minnesota
Propulsion:	Aerojet General Corporation Sacramento, California
Armament:	Atomic Energy Commission Los Alamos, New Mexico
	Sandia Corporation Albuquerque, New Mexico
Support:	Aerojet General Corporation (Auxiliary power unit) Sacramento, California

Ideas and/or inventions which are believed to have Air Force application to missiles may be submitted for evaluation to:

Office of Technical and Industrial Relations
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ADVANCED RESEARCH PROJECTS AGENCY

FACT SHEET ON ARPA

On July 1 the Department of Defense released a fact sheet on the Advanced Research Projects Agency. This is the first such fact sheet made available and because of its importance DATA is reproducing it here verbatim.

The Advanced Research Projects Agency is composed of two operational elements and one staff element.

Both operational elements function under the Director and Deputy Director, R/Adm. John E. Clark, USN. One is the Office of Program Control and Administration, headed by Lawrence P. Gise. The other is the Office of Foreign Developments under William H. Godel.

The major staff element is the Advanced Research Projects Division, of Institute for Defense Analyses, directed by Dr. Herbert F. York, who also, as personal scientific consultant to Roy Johnson, is Chief Scientist of ARPA. The Institute for Defense Analyses, a non-profit corporation jointly sponsored by a number of universities, has contracts with DOD including one which provides for operation of the Advanced Research Projects Division.

Lambert L. Lind is the Special Assistant to the Director and James O. Spriggs is Special Assistant to the Chief Scientist of ARPA. R/Adm. Clark is assisted by a military advisory group consisting of Colonel R. G. Thomas, USA; Captain R. C. Truax, USN; Commander L. A. Kurtz, USN, and Colonel D. L. Lay, USAF.

The Office of Program Control and Administration is the planning, financial, contracting and management authority on ARPA projects. The Office of Foreign Developments primarily identifies and explores foreign development research activities which may assist ARPA programs. It also is responsible to Mr. Johnson for ARPA relationships with the Office of the Assistant Secretary of Defense for Public Affairs.

The Advanced Research Projects Division of the Institute for Defense Analyses, headed by Dr. York, is under contract to provide scientific and engineering support for the Director of ARPA. Its 25 scientists and engineers are organized into three major groupings: Space Science and Technology, Ballistic Missile Defense, and Advanced Solid Propellant Chemistry. Under the Coordinator for Space Science and Technology, Mr. David Young, eight panels have been organized. They are chaired as follows:

Man-in-Space	Dr. Samuel B. Batdorf
Military Satellites	Mr. Charles R. Irvine
Large Engines	Dr. Arthur J. Stosick

Communications Relay	Dr. George Brady
Meteorology Investigation	Mr. Roger S. Warner
Scientific Satellites	Mr. Richard Canright
Exploratory Research	Mr. Robert Youngquist
Satellite Tracking	Mr. Richard S. Cesaro

Dr. John F. Kincaid serves as Coordinator of the Solid Propellant Chemistry Group. The Ballistic Missile Defense panel structure is being organized under Mr. William Hutchins.

Within this organizational framework, ARPA, as an agency of the Dept. of Defense, is "project oriented"; that is, it sees to the performance of advanced research assigned to it either by the SecDef or, through the Secretary, by the President on the advice of his scientific assistant, Dr. James R. Killian.

ARPA presently has three general assignments: Space science and technology, because all U. S. actions in this field are of an advanced research nature; advanced research and development of future ballistic missile defense; and propellant chemistry. From time to time it is expected that additional projects requiring the somewhat distinctive authorities of an ARPA type organization will be assigned. However, beyond ensuring maximum imaginative examination of the areas assigned, it is not the function of ARPA to engage in the field of research and engineering at large.

ARPA executes its current projects in a manner unique in the Pentagon. The Director assigns "tasks" to the Advanced Research Projects Division of the Institute for Defense Analyses, as provided by its contract, for studies, evaluations, and proposal reviews in the advanced research field. The results of these studies and reviews are forwarded to the Director of ARPA, who, upon the advice of ARPA operational elements and consultants, may approve the recommendations and assign the required action to one or more of the military departments, or contract with private industry or universities, depending upon the capabilities of each to perform in a timely, economical fashion.

In its management of those projects assigned within the Military Departments, ARPA deals directly with the operational element which does the actual work. Funds are provided by ARPA to finance the projects. With regard to contracts with industry or educational research with scientific institutions, ARPA may request one military contracting organization to execute and administer a contract for ARPA, or it may elect to execute a contract and "farm it out" for administration.

Under this method of operation, ARPA is carrying out its role of reviewing, programming, directing and expediting advanced research programs.

When a project assigned to ARPA has passed beyond the research and development stage, it is assigned to one or more of the military departments or other appropriate agencies for engineering, production and utilization.

Since its establishment February 7, 1958, ARPA has authorized the following projects:

The Army Ballistic Missile Agency, Huntsville, Ala., has been requested to undertake the launching of two lunar probes, a cosmic ray experiment, an inflatable sphere, and two corpuscular radiation experiments.

The Air Force Ballistic Missile Division, Inglewood, Calif., has been requested to launch three lunar probes.

The Naval Ordnance Test Station, Inyokern, Calif., is developing a mechanical ground scanning device for use in lunar probes.

The Office of Naval Research has awarded a number of small study contracts for ARPA in various fields.

Likewise, Headquarters, Air Research and Development Command is administering for ARPA a number of study contracts including a study on extremely high thrust engines.

The Naval Research Laboratoy and the Army's Ballistic Research Laboratories have been requested to develop and install a combined minitrack-doppler network to detect and track non-radiating satellites.

In addition, a number of classified projects utilizing the talents of all three military departments have been authorized.

Approximately $50 million has been committed through June 1958. $10 million of this amount was made available by the Supplemental Defense Appropriation Act, 1958. The balance has been allocated from the Emergency Fund of the Secretary of Defense. Actual commitments by months have been:

March	$ 9,150,000
April	7,800,000
May	10,750,000
June	19,400,000
Total	$47,100,000

For the fiscal year starting July 1, 1958, $520 million is expected to be available. Important projects are in readiness to proceed as soon as the funds are apportioned. Additional projects are under active review.

AIR/SPACE

Navy North American A3J VIGILANTE

ADVANCED RESEARCH PROJECTS AGENCY

has announced that ARDC has been directed to proceed with the letting of two contracts for study of ecological aspects of housing human beings in capsules for long periods of time in outer space. ARPA says contracts on this research will total $400,000. ///ARPA 0616/

DYNA-SOAR BOOST-GLIDE AIRCRAFT

has been announced as being under AF contract to Martin and Boeing. New research plane will use both centrifugal force from ultra high speed as well as aerodynamic lift. NACA and USAF will be partners in managing DYNA-SOAR project as they have in past experimental aircraft such as X-1, X-2 and X-15. Preliminary investigations show that by varying rocket boost, and thus the velocity, and with the control available to the pilot, from one to many earth orbits followed by a normal landing will be possible. ///USAF 0616/

INSTRUMENT FLIGHTS FOR HELICOPTERS

have been made a reality by Sikorsky Aircraft. New helicopter, HSS-1N, is latest version of familiar S-58 carrying full instrumentation. Sikorsky and Navy describe HSS-1N as major breakthrough in helicopter flying. Major step toward instrument flight for helicopters has been development of automatic stabilization equipment (ASE) which has been in production since 1954. ///Navy 0526/

FLIGHT OPERATIONS CENTER AIDS ARMY TACTICAL AIRCRAFT

The Flight Control System (FOC), mounted in military vans and trailers, is for tactical use in battle zones. However, Army SigCor communications experts believe the system may provide new ideas for other military and civil aviation authorities working toward safer and faster flight control required by the jet age. FOC has been developed by Army Signal R&D Lab at Ft. Monmouth, N. J. ///Army 0618/

INERTIAL SYSTEM TO GUIDE X-15 IN SPACE

has been announced by USAF and NACA. Developed by Sperry Gyroscope, system's principle function is to help X-15 pilot control his rocket plane to prevent it from burning up by reentering denser atmosphere too steeply, or "bouncing back" too high from too shallow a trajectory. The system also will feed electronic information into airborne recorders to permanently chart each flight. X-15 is under development for USAF by North American Aviation, for an initial flight expected next year to an altitude of more than 100 miles at a speed of about 3600 mph. The new flight instrument system would receive its severest test when the research rocket returns to earth's atmosphere from outer space. ///USAF 0603/

Navy Chance Vought F8U-3 CRUSADER

POWERFUL RADIO ORDERED FOR MARINE CORPS

Contracts totalling $15 million for powerful radio communications relay sets have been awarded to Raytheon by Navy's BuShips. Sets are intended for Marine Corps use. Contracts cover 1365 units of the AN/TRC-27 (Army-Navy Transportable Radio, Communication). Production has already started and will continue through 1958. ///USMC 0618/

ARPA ANNOUNCES PROGRAM TO IMPROVE SATELLITE TRACKING

and detection. As an initial program ARPA has assigned construction and operation of Minitrack stations on the East and West Coasts of the U. S. to the Naval Research Lab and operation of a CW-Doppler complex in Texas to Ballistic Research Laboratories. Resulting network will provide a radar and communications fence across the southern United States. ///ARPA 0619/

NAVY AWARDS TWO CONTRACTS TO SPERRY GYROSCOPE

for $19 million for production of radar sets AN/SPG-55, TERRIER guidance, and $8 million for AN/SPG-56, TALOS radar guidance equipment. ///Navy 0618/

CONSTRUCTION OF NAVAL RADIO RESEARCH OBSERVATORY

at Sugar Grove, W. Va. Radio astronomy facility will cost $60 million. Project expected to begin after mid-August. Construction will be made on 1500-acre facility, culminates 11 years of intensive research in field of radio astronomy by Naval Research Lab. ///NRL 0617/

DECOY MISSILES — BULL GOOSE, GREEN QUAIL

BULL GOOSE, 31-foot-long fiberglass surface-to-surface missile, is reported difficult to detect by radar, its body absorbing rather than reflecting radar signals. Powered by conventional jet engine, weighs two tons, unofficially is said to attain speed of Mach 1.3. GREEN QUAIL, an air-launched rocket, is said to perform functions similar to those of BULL GOOSE. Another developmental rocket, the GANDER, is reported to be able to carry a nuclear warhead. ///Military Review 06-68/

PROGRESS ON CONTACT ANALOG

Now flight tested, new device that shows pilot "pathway in the sky" is now said to be applicable to navigation of surface ships, submarines and remote controlled vehicles as well as important space flight electronics tool. Displaying picture of outside world on flat TV tube, contact analog shows pilot how he's doing and what he's doing. Clouds and terrain will appear in ultimate presentation with mock "roadway" overprinted on presentation to show pilot where to go. ///NavAer News 06/

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B. E. Becker, CPA
DATA Publications

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as business expenses, charitable donations, personal expenses or lobbying expenses are each treated differently. The first two are tax deductions under varying conditions. As a business expense, it should have a promotional or cost cutting aspect. As a donation the organization receiving the igft should itself have an income tax exempt status; exempt because of its charitable, educational, etc., nature.

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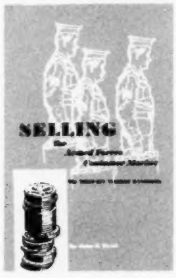

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John J. Ryan served as staff advisor to four Exchange Chiefs over a period of nine years. He attended high level meetings with military store representatives, personally visited several hundred service stores, and directed the first world-wide exchange conference. A well-known writer, Mr. Ryan's byline has appeared in over 100 of the nation's top newspapers and magazines. He is now employed as a Market Consultant and Special Features writer by the Army Times Publishing Company.

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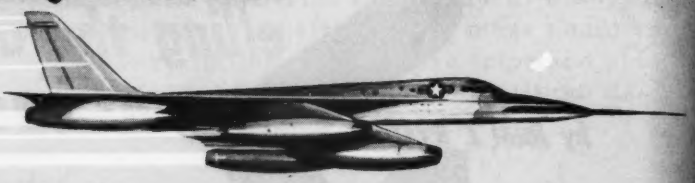

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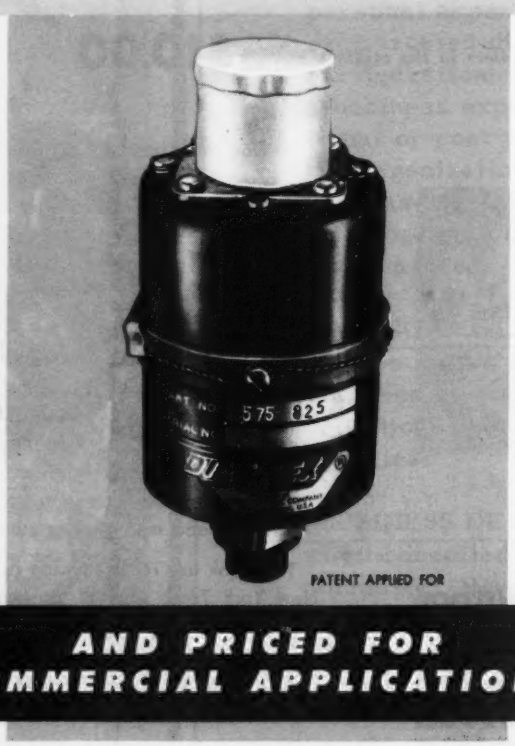

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